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25 August 2021

David Brettell
Planning Department
Manchester City Council
Town Hall
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Dear David

Science and Industry Museum: Power Hall Application for Planning Permission and Listed Building Consent

Please find enclosed an application for Planning Permission and Listed Building consent for the reinstatement of the Power Hall roof, new windows and doors, new internal services, fabric repairs and removal of the 1980s internal platform.

The Science and Industry Museum is located to the north west of central Manchester, to the east of the River Irwell and is within the Castlefield Conservation Area.

The Applicant is the Science and Industry Museum.

1 Background

In December 2020, £4.3 million of funding from the Government's Public Sector Decarbonisation Scheme was awarded to the Power Hall and the wider Science and Industry Museum (SIM) site to substantially improve energy efficiency and lower carbon emissions across this globally significant site. This grant will ensure the museum's environmental sustainability and support Greater Manchester's goal to become carbon neutral by 2038 – 12 years ahead of the national target.

This environmental sustainability project will utilise some of the unique site-specific opportunities. For example, in 1830 a well was built on the site to harness the power of the ground water. This natural resource will once again be utilised by the installation of new water source heat pumps and boreholes along with the latest green technologies. This is a visionary, sector-leading project where the original and modern combine to create a sustainable museum of the future. Additional funding from the Department for Culture, Media and Sport will help to place carbon literacy and zero carbon technology at the heart of the museum's story and visitor experience, as well as assisting in undertaking urgent and major repairs to the Power Hall. Overall, the project will transform the Power Hall into a landmark symbol of the past, present and future of engineering, inspiring future scientists, entrepreneurs and innovators in developing careers and skills to help achieve a green economy and the next (green) industrial revolution.

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The Power Hall and Decarbonisation project is to be delivered as one project. However, the required Planning and Listed Building Consent applications must be split into several separate applications due to the different listings of the buildings and the deadlines for the Government's Public Sector Decarbonisation Scheme which needs to be completed this year. Splitting the consent packages will also allow construction work to start on site earlier and ensure the Applicant meet the Government deadlines.

This application is for Element 3b as highlighted in the below table.

Works Package	Package Description	Planning and Listed Building Consent Applications	Submission / Determination
1A	Water Source Heat Pump Network (External) Water Source Heat Pump and other associated plant in the Power Hall	• Application for Listed Building Consent for alterations to the Grade II Listed Power Hall for the creation of openings and the installation of plant plus the introduction of a services trench within its curtilage. • Application for Listed Building Consent for installation of a new services trench within the curtilage of the Grade II New Warehouse. • Application for Planning Permission external works to the Boiler Room including removal of an external staircase and making good in addition to the installation of a new balustrade and new doors. • Application for Listed Building Consent for alterations to the Grade I Listed 1830 Warehouse for the creation of openings and the installation of pipework plus the introduction of a services trench and borehole cover within its curtilage.	Determined 02.07.21 130170/LO/2021 130173/LO/2021 130171/FO/2021 130172/LO/2021
1B	Boiler House External Modifications (to facilitate installation of a new sub-station) Pipework in the 1830 Warehouse (to facilitate installation of a new water source heat pump)		
2	Power Hall Roof Removal	• Application for Planning Permission for removal of the Power Hall roof during refurbishment and repair works. • Application for Listed Building Consent for the removal of the Power Hall roof during refurbishment and repair works.	Determined 29.07.21 130614/FO/2021 130615/LO/2021

Works Package	Package Description	Planning and Listed Building Consent Applications	Submission / Determination
3a	Power Hall Timber Repairs and Strengthening	• Application for Listed Building Consent for Timber Repairs and Strengthening in relation to the Power Hall roof.	Submitted 06.08.21 131290/LO/2021
3b	**Power Hall Roof reinstatement, new windows and doors, new internal services, fabric repairs and removal of 1980s internal platform and railway doors.**	• **Application for Planning Permission & Listed Building Consent**	**Submitted 25.08.21**
4	Power Hall Gallery Refurbishment, Internal Services and Rail Doors	• Application for Planning Permission & Listed Building Consent	Autumn 2021

2 Context

The Power Hall is a Grade II Listed Building within the Science and Industry Museum complex. The Science and Industry Museum is located to the north-west of central Manchester, to the east of the River Irwell and within the Castlefield Conservation Area.

The Power Hall was erected as a shipping shed in 1855 for the LNWR to provide space for immediate unloading and transportation of goods on to carts, trucks and overnight garaging for locomotives. Offices were built at its western end in the early 1860s to serve the administrative functions of the shipping shed. In 1881, a substantial electrical travelling gantry train was installed by the LNWR, adjoining the northern elevation of the building to support its expanded use. The building remained in use as a goods transfer shed until the mid-1970s.

In the late 1970s – mid 1980s, a series of considerable repairs and alterations were carried out and an extension was added to the north west of the Site to convert the building into a gallery for the Science and Industry Museum. The shipping shed was subsequently renamed the 'Power Hall' and has housed the Museum's collection of locomotives since 1983.

The roof the Power Hall was altered considerably in 1979 and structural works were carried out to the trusses. Large steel overplates were introduced at truss ends and a series of chemical treatments were carried out, whilst some of the timber padstones were replaced with concrete and brick infills were added to some of the masonry pockets.

In 2018, the Power Hall was closed to members of the public due to health and safety concerns in relation to the poor condition of the roof. In the same year, a £6 million grant from the Department of Digital, Culture, Media and Sport and additional funding from the Science Museum Group was committed to the Power Hall to facilitate urgent and major repairs to the roof and a redisplay of the gallery content to show how Manchester changed the world. To date, the building has remained scaffold and initial surveys have been undertaken alongside design feasibility works.

The below plan identifies where the Power Hall is located within the Science Museum estate.

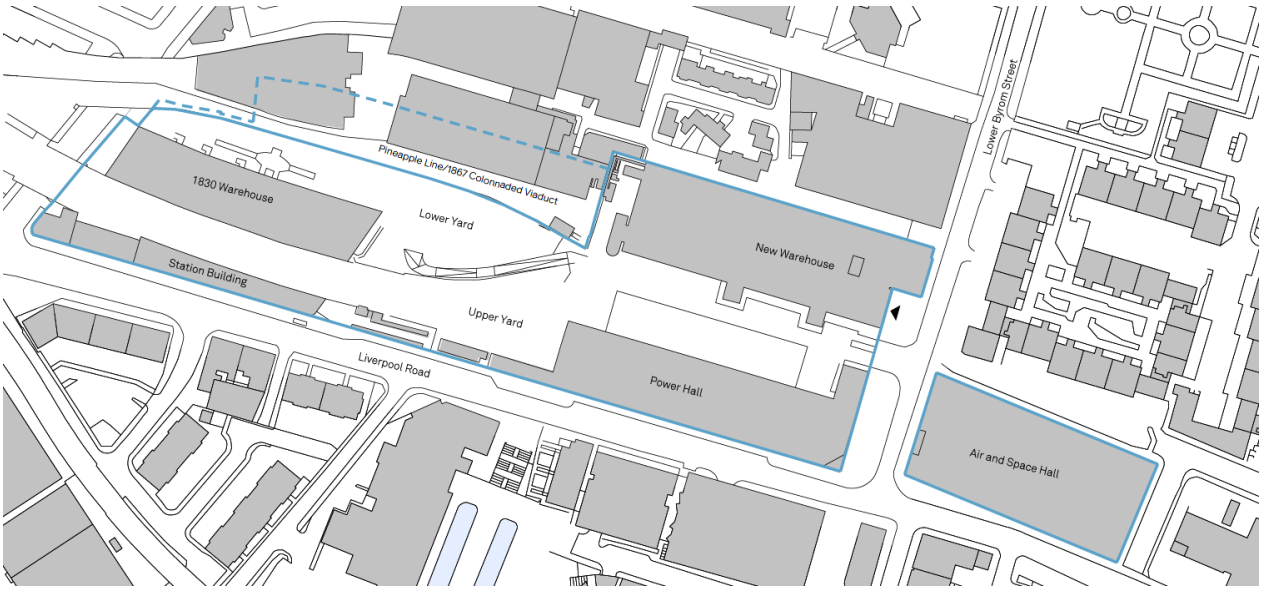


Figure 1 – Site Plan of Science Museum Estate

3 Background

Listed Building Consent was granted by Manchester City Council (MCC) on 29 June 2021 (PP Ref. 130615/LO/2021) for the removal of the Power Hall roof during refurbishment and repair works. This application, referred to as Package 2 of the wider Power Hall and Decarbonisation project, explained that there were significant programme gains from progressing the removal of the roof while final design decisions were made on the roof replacement, reducing the risk of delay from long lead times.

An application for Listed Building Consent for timber repairs and strengthening in relation to the Power Hall roof was submitted to Manchester City Council on 6 August 2021. This was due to the timber for truss repairs having an 8-week lead in time and needing to be ordered as soon as possible in order for the team not to fall behind schedule. It was therefore decided to separate this workstream from the full roof reinstatement (Package 3b) in order to ensure the works keep to programme and delays are avoided which would have a direct financial impact on the project.

Submitting Package 3b at this later stage has allowed there to be programme gains from progressing the removal of the roof while final design changes were made on the roof replacement ensuring that the budget is used efficiently. The overall intention of the Museum is been to ensure that the Salix funding received has maximum impact and provides public benefit derived from a high-quality refurbishment of the Grade II listed building and the Gallery itself.

4 Significance of the Power Hall

The Power Hall is of high historic value for its role as one of Manchester's key hubs for goods transfer and it represents the success of the Liverpool Road Station as part of a wider network of goods distribution across the country and throughout the world. It is also representative of the site's historic development – as the first major building to be erected following the station's transfer to a goods only station in 1844.

The building is also significant as the first building to be converted and used by the Museum to celebrate the station's 150th anniversary.

The site and the building are of high evidential value for the continued development of the site for goods and shipping sheds.

It is of high aesthetic value as a rare survivor of an early urban goods transfer shed and is representative of development of the railway good sheds as a building type.

Some of the building's features exemplify LNWR's architectural standards – including the roof lights and the blind arcading to its street-facing elevations, which contributes to its significance.

The former Goods Offices contribute to the building's significance and are representative of the mid-Victorian development of the good station and are a typical example of their type.

The late-19th century travelling crane, located along the north elevation is of high significance as an increasingly rare survivor of its type.

The mid-20th century WC block has little or no architectural value and does not contribute to the significance.

The early-1980s Visitor Entrance Block was designed to reflect the architecture and detailing of the Power Hall; however, it fails to contribute as its details are not well-handled and it features large expanses of smoked brown glazing, which detracts. Overall, this building is of neutral significance.

For further information, including a hierarchy of significance of the building's features, please see the accompanying Heritage Impact Assessment prepared by Donald Insall.

5 Pre-application Engagement

The scope of this application has been discussed with Manchester City Council as the Local Planning Authority on 14 July 2021 and 11 August 2021.

6 Proposals

The description of development for the planning permission is:

"Planning Permission for reinstatement of Power Hall roof, new windows and doors, stripping of external services and removal of railway doors."

The description of development for the listed building consent is:

Listed Building consent for reinstatement of Power Hall roof, new windows and doors, new internal services, fabric repairs and removal of 1980s internal platform and railway doors."

The proposed works which form this application can be separated into five workstreams which, while summarised below, are fully detailed in the accompanying Design & Access Statement prepared by Carmody Groarke as well as the drawings submitted with this application.

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6.1 Roof

Roof Build Up

The proposed roof build up balances the need to improve the thermal performance against the heritage status of the building, relating to the energy strategy for the building that sets a target U-value of 0.2W/m2K for the roof (please see page 15 of M&E Strategy prepared by Max Fordham for full details of this strategy).

The proposed approach is to insulate above the rafters so that the roof remains fully expressed. Above the existing rafters, a sheathing board is required which is proposed as a dark stained Oriented Strand Board (OSB) board, acting as the structural deck to support the roof insulation. The proposed colour, which can be seen on page 27 of the Design & Access Statement, is a granite grey which provides a dark background to view the historic roof structure against and is similar to the colour of the original slate which would have been visible.

There is a proposed increase to the ridge height which equates to 200mm which, given the scale of the building overall, is considered to be imperceptible.

Rooflights

The proposal for the rooflights is to retain the full extent of the central spine of rooflights on either side of the central valley, remove the south, north, and (non-original) east facing perimeter rooflights, and install a single large rooflight on the north pitch.

This solution reduces the extent of south facing rooflights and their associated solar gains, whilst bringing emphasis to the original central loading platform and the location of the new visitor entrance to the building.

The proposed rooflights are double glazed units with an inner pane of laminated glass to reduce UV radiation onto the Museum collection below. The interlayer within this pane will have a translucent white finish which gives it a ‘milky’ effect which will ensure that any surface dirt that washes over the glass from the area of slate roofing above will be less visible. Full details of the rooflight type, layout and structure can be found on pages 31-33 of the Design & Access Statement.

The Museum does not believe that a sustainable long-term use for the Power Hall as a continued Museum space could be delivered without the reduction in rooflights.

The Power Hall houses one of Europe's largest collections of working steam engines and so there is a significant responsibility to maintain for the public. The placement of historic engines within such a large, listed building has many conservation challenges including managing humidity, temperature and UV levels in order to support conservation and preserve the unique collections within the space.

A full technical assessment has been carried out by Max Fordham and is detailed in the accompanying M&E Strategy. It notes that retaining the current number of rooflights would increase risks including damage to machines caused by UV (damaging paintwork), overheating and condensation, as well as an increased annual conservation cost to mitigate these factors. Reducing the south facing roof lights in particular would therefore help to conserve these assets without the need for expensive UV filters.

In its current arrangement, the building overheats in summer mainly due to the south facing rooflights and their solar gain. Reducing the area of rooflights and replacing them with opaque roof therefore minimises solar gain and reduces heat loss in winter given that the space will have conservation heating to protect the historic working machines.

If all rooflights were to be retained, the space would not pass the overheating criteria for CIBSE TM52 for the future climate change scenario without ventilation, even less so as the modelling is already based on glazing with a low g-value in order to reduce transmission of solar radiation (See page 13 of the M&E Strategy prepared by Max Fordham for full details).

Although some minimal mitigation could be provided by increasing the ventilation, this would add cost and have a visual impact on the facades given that the additional ventilation would be part of the glazing system and would also be required on the roof. Even with ventilation the space would be uncomfortably hot due to the direct solar radiation entering through the rooflights. As the building will rely on night cooling with the ventilation open at night, there is a limited opportunity to provide the required free area for ventilation while also remaining secure and protected from weather ingress.

The inclusion of blinds, back painting or temporary coverings would not mitigate the heat gain as these options would not stop the penetration of UV radiation through the glass. The blinds, coverings or painted glass would absorb the heat inside the space and then transmit it (as infra-red) into the space. External blinds or louvres would mitigate the solar gain but would be expensive to install, have a significant visual impact and require excessive maintenance.

Finally, additional rooflights would create additional maintenance access challenges as the perimeter of Power Hall needs to be maintained by a mobile access platform and it is not possible to create a trafficable walkway. There would also be an additional long-term cost of maintaining the rooflights themselves as the additional ventilation which would be required would present challenges due to general weather damage and birds interference.

Roof Slates

The existing roof slates are being carefully removed from the roof during the strip out in order to retain as many as possible for reuse (as consented by applications 130614/FO/2021 and 130615/LO/2021). Although it is not possible to know at this point what percentage of slates will be salvageable, plans on page 34 of the Design & Access Statement propose various layouts of retained slates depending on the level of salvage achieved.

The additional slates required to complete the roof finish will be from a reclaimed source to closely match the size, colour and texture of the existing slates. Given the current variety in slate colours across the roof, there will be some variation therefore the proposed approach is to locate slates with variation on different planes of the roof so that these variations are imperceptible.

Full details of the roof finish can be found on page 35 of the Design & Access Statement.

New Gutter

An options appraisal which details the consideration which has been given to the Power Hall valley and parapet gutters can be found on page 37 of the Design & Access Statement. The proposed option is to use

membrane lined gutters which are a modern system providing a robust, buildable, maintainable and cost-effective solution that will protect the historic building structure for over 40 years.

The parapet gutter (see page 38 of the Design & Access Statement) runs along the perimeter of the building. The increase in the roof build-up depth allows the new gutter to be raised up allowing it to achieve a greater capacity. It also allows for a wider, flatter gutter which is easier to clean and maintain.

The valley gutter runs along the central spine of the building. The proposed insulated membrane lined box gutter will sit above the new flitch beam and the existing historic timber beams. The gutter is laid flat and utilises the existing outlets through the cast iron columns, therefore creating very limited visual change when seen from below.

Roof Maintenance Access

The proposed roof access solution is for perimeter gutter access via a Mobile Elevated Working Platform (MEWP) with a trafficable valley gutter accessed via temporary demountable platform.

MEWP access to the perimeter provides the necessary access for visual inspections and clearing (via mobile gutter vacuum) for these areas. If more significant maintenance is required to the roof surface beyond the scope of these works, this would be subject to localised scaffolding access.

This solution has the benefit of the permanent removal of the non-original CAT ladder to the north elevation of the building which, prior to the installation of the temporary scaffold/roof protection, was previously the primary point of access for roof maintenance.

Other works to roof

Full details of the proposals for lighting protection, high-level services and services can be found on pages 40-43 of the Design & Access Statement and within the Lightning Protection Strategy prepared by Carmody Groarke.

6.2 Windows and Doors

The existing modern windows are single glazed and there are a number of different window systems throughout the building, with different frame profiles and colours, which are visually incoherent. In terms of historic significance, the glazing is neutral at best with some detracting features.

The proposed window concept proposes an assembly of fixed double glazed window panes within a timber and metal surround. This ‘surround’ deals with the need for ventilation and fire exit doors which creates a simple and coherent window design, representing the modern use of the building as a public exhibition space and making the definition between entrances and windows clear.

There are also multiple variances in the design and form of the doors due to their different functions and roles within the building’s envelope.

The historic timber doors were used as a reference point in the design of the new windows and doors. The surround is proposed to be clad in vertical slatted timber, (internally and externally) referencing the historic materials used. Areas of ‘hit and miss’ cladding are used to create ventilation zones which will be controlled with a Building Management System to use night-time cooling to eliminate the risk of overheating.

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New entrance

The proposed new entrance, shown on page 51 of the Design & Access Statement, has a recessed door which, although subtly different from the other windows, maintains a relationship to them via its proportions.

The recess will essentially create a lobby space which will provide a sense of arrival to visitors from the New Warehouse and wider site. Further to this, it will act as a space where visitors are able to wipe their feet or shake off their umbrellas in order to help keep the exhibition space tidy and free from outside debris.

Upper Yard windows

The surround for proposed Upper Yard windows' is clad externally with vertical timber cladding, with areas where ventilation is required clad with hit and miss boarding to allow air to pass through. At low level, a 200mm metal plinth provides a robust detail to the base of the timber cladding to prevent weathering and damage. The external timber will be treated with a surface coating to provide a weathered appearance at an accelerated rate.

Internally, the surrounds are clad with vertical timber boarding finished with a wax oil stain which will protect the timber from surface damage.

Ventilation panels are located at a high level to ensure debris doesn't collect within the build-up or compromise building security while still allowing for night time cooling and thermal comfort during summer months.

The principle of glazed infill is entirely modern. The openings once contained solid timber plank and rail doors so the proposal is actually closer to the original condition.

Liverpool Road windows

The proposed windows onto Liverpool Road, shown on page 51 of the Design & Access Statement, have a taller plinth in response to the presence of the historic carriage stones, as well as to create a more robust base along the public footway to avoid the need for bollards or planters to be used in order to deter vandalism or potential acts of terrorism.

The metal plinth responds to the existing brick plinth which steps along the gradient of Liverpool Road, then stepping up to align with the cills of the adjacent blind windows. Above plinth height there are three fixed glazed panels with a hit and miss timber cladding, relating to the materials and proportions of the apertures on the north side of the building.

Chamfered corner window

The chamfered corner to the south east of the Power Hall changes its form to acknowledge the street rather than being dictated by the railway infrastructure, giving it greater prominence along Liverpool Road.

The proposals respond to this while also responding to technical requirements of the design brief which include the need for security, building signage and the fire strategy which dictates that a fire exit door is required at this end of the building.

The proposed design, shown on page 53 of the Design & Access Statement, intends to relate to the other window apertures through both materials and the proportions of the glazing. The requirement for a fire exit is discretely integrated into a side panel to ensure that the large glazed window (4.3m x 4.5m) frames a clear view into the Power Hall to visibly display the collection, with subtle emphasis placed towards the main entrance to the Museum through its asymmetric positioning, which also allows for the integration of Museum signage to avoid the need for window vinyls.

Railway Door

New rail doors will replace the existing concertina metal doors which were installed as part of the 1980s works. This application proposes the removal of the existing doors to allow for further investigations, with detailed design proposals for the new doors to be submitted as part of the Package 4 planning applications.

The outline concept for the doors proposes two large sliding doors to the larger aperture and can be seen on page 54 of the Design & Access Statement.

6.3 1980s Platform Strip Out

The demolition plan on page 57 of the Design & Access Statement shows the proposed area of modern platform to be removed. Removing this area of modern platform will allow the team to fully survey the fabric below ahead of developing a new exhibition design to be submitted as part of the Package 4 planning applications.

The demolition will include the removal of the modern support walls, timber joist structure and surface finishes, as well as any railings or other items resting on the platform, which includes some redundant plant located on the north side of the modern platform. No exhibits or historic fabric will be moved or removed as part of this initial demolition work.

6.4 Fabric Repairs

Conisbee structural engineers carried out a detailed inspection of the Power Hall structure in 2019 with the aim of evaluating the condition of the building fabric. Repair methodologies and drawings have been submitted with the listed building consent application which summarise the scope of repair works proposed.

The proposed repairs have been developed on the basis of a minimally invasive approach with retains as much of the original fabric as possible. Where intrusive repairs are deemed necessary to maintain durability and structural performance, they will be as sympathetic, transparent and honest as possible so as to allow the story of the Power Hall and its relationship to the Gantry and wider site to be clearly read.

A summary of the scope of the repair works can be found on page 60 of the Design & Access Statement, however for further details please refer to the three Repair Methodologies prepared by Conisbee and submitted as part of this application.

6.5 Alternative Trenching Route

Within the Package 1a submission (LBC Ref. 130170/LO/2021), a trench route for below ground services associated with the new plant was shown in the Upper Yard. An alternative route is now necessary to avoid a drainage run identified on site.

The new route, which can be found on page 62 of the Design & Access Statement, remains within the modern surface finishes of the Upper Yard and will be implemented in accordance with the conditions of the original consent with respect to their agreed methodologies.

This route will now however penetrate the Power Hall external wall below an existing window aperture so that any risk associated with making this penetration through the historic fabric is significantly reduced as the existing arch above deals with the majority of the masonry load.

7 Methodology

Method Statements for all works to be carried out as part of this application have been prepared by H.H Smith and fully detail how the works will be carried out, as well as how historic fabric will be protected prior to works beginning and throughout works taking place.

The Method Statements have been split into four workstreams which are summarised below.

7.1 Installing new windows and doors

Removal of existing Windows and Doors

The frame will be carefully dismantled and glass will be lifted out using glass suckers either from the floor level or existing scaffold. The frame will then be unscrewed from the structural steel at head and floor at base. All framework will be dismantled into small sections and carried out of the building via the designated walkways which will have been protected. It will then be disposed of into skips.

Steel alteration

Two genie lifts will be placed at either end of the existing steel and jacked up to take the weight of the steel. The existing resin fixings will then be carefully removed from the brickwork by hand.

The genie lift will be raised up so the steel is at the correct height and the brickwork will be drilled in the correct location with the steel resin fixed as per the structural engineer's design and specification.

Installing of windows and doors

New curtain walling and glass is to be manually carried into the building and stored by the required openings and operatives are to construct the curtain walling in situ. The frame is to be screwed and fixed securely to the secondary structure, with any works at height being done from the tower scaffold.

Once the frame is secured, operatives are to install the new pieces of glass into the frame. Glass will be manually carried to the opening location and stored in a designated location. Glass will then be lifted into the frame and secured to it.

7.2 Roof installation

Painting soffit boards

Following the delivery of the boards to site, each board will be unloaded and laid out to be painted. Once each pack of boards has been painted and sufficiently dried, they will be reloaded onto the pallet and re-strapped ready to be lifted to roof level for installation.

Cutting timber or boards

If a smaller section of timber or boards is required, the operative will cut it using an electric or hand-held saw. The lengths required will be measured with a tape measure and the measurement will be relayed to the timber and marked with a pencil. The operative will then cut the timber or boards using a chop or hand saw to the required length.

Installation of soffit boards

Soffit boards are to be manually handled from the loading bays to the installation location on the scaffold. From there, they will be lifted into position and fixed sufficiently to hold in place.

Boards will be installed from the bottom of the roof pitch, working up and outwards so that a platform is always in place.

Installation of roof build-up

New counter rafters are to be installed at the specified centres. Following this, the woodfibre insulation will be installed between the rafters. These sheets will be held in place by the horizontal counter rafters.

The insulation sheets will be placed vertically on top of the counter rafters. They will be pinned in place prior to any mechanical fixings being installed. The membrane, counter batten, batten and slate will all be installed as per the NBS specification.

The reused slates will be taken from storage locations onsite and moved to the area of roof that they are to be reinstalled. Where slates have been stored on ground level, they will be carefully lifted on to the nearest scaffold loading bay and then manually carried to the required section of roof.

7.3 High level services removal (Non-historic fabric)

Plant removal

Protection will be installed to all historic fabric within proximity of the plant to be removed, including exit routes leading to the skip.

Each item to be removed will require a sign off sheet to be completed prior to commencing. This will require sign off from Max Fordham and SIM Estates as well as the M&E contractor.

Once sign off is completed and protection installed, the services will be unfixed from structure. Hand tools will be used in areas within close proximity and interfaces with historic fabric. From there it will then be cut up into smaller sections using a metal saw or dismantled with hand tools. This will allow the smaller sections to be manually carried out of the building and disposed of in a skip.

The existing scaffold crash deck will be used for access and where services extend further up into the roof, tower scaffolds will be erected.

7.4 Removal of non-historic fabric

Raised platform removal

Only fabric dating from 1980 and onwards is proposed for removal. This will be as per the removal drawings.

Removal of rubber matting & vinyl

Additional protection will be installed to any surrounding objects or existing building fabric. The floor will be cut into smaller, workable sections using a knife. Operatives will use 'Cut level 5' rated gloves when using the knives. Additional caution is to be taken with areas abutting the historic platform to the west.

Operatives will carefully lift the floor finishes using hand tools, a pinch bar and a claw hammer prior to manually pulling up the flooring from the floor. It will then be disposed of in a skip.

Removal of floorboards

Additional protection will be installed to any surrounding objects or existing building fabric – including the columns and cobbled areas.

Once the rubber matting and vinyl has been removed and the floorboards are exposed, a photographic record will be completed. The area due to be removed does not contain any original floorboards or timbers - however this will be confirmed before progressing any further.

Prior to removing any of the floor boarding, the voids underneath will be viewed via the access hatches to confirm the floor joist positions and direction as well as any services or historic fabric which interface with the floor boards that may be affected by the removal of the floor boards.

Where the floor interfaces with the museum machinery, the floorboards will be left in place until the floor in the surrounding area is opened up sufficiently to confirm the structural support for the machines. In most cases, the machines are sat on a masonry or concrete plinth.

Operatives will lift the floorboards using hand tools, a pinch bar and claw hammer. Where not possible to remove by hand tools, a reciprocating saw will be used, with care being taken not to damage any of the building fabric. The flooring will be manually pulled up from the floor joists, working from solid floor level to avoid risk of falling from height. Once lifted, floorboards will be disposed of in a skip.

Removal of floor joists

Once the floorboards have been removed and the floor joists are exposed, a photographic record will be completed. The area due to be removed does not contain any original floorboards or timbers, however this will be reviewed with Donald Insall Associates and confirmed before progressing any further.

Also prior to continuing to remove the floor joists, it will be assessed if removing them will have any structural implications for the objects sitting on the platform. As with the floorboards, any joists which need to stay in place to support the objects on the platform will do for the full length between the supporting masonry walls. These areas will be viewed and agreed with the structural engineer.

Once exposed, the services will also be isolated and stripped back if this was not able to be completed in the initial service strip out works.

The floor joists will then be cut out in manageable sections using a reciprocating saw, with care being taken not to damage any of the building fabric. These sections will be removed out of the building and disposed into a skip.

Removing masonry supporting walls

Once the masonry walls which are not supporting any machinery are exposed and all services are removed, they will begin to be carefully demolished.

Prior to any works starting, any cobbles will be boarded with hardboard to prevent damage from any falling debris or bricks. Additional protection will be installed to any surrounding objects or existing building fabric – including the externa brick walls.

The masonry walls will be demolished using hand tools and small hand-held electric breakers. Where interfacing with original fabric such as cobbles, operatives will work in pairs to prevent any heavy blocks or bricks from falling onto the floor in order to mitigate against damage being caused.

When removing masonry walls sat on original fabric such as cobbles or against external brick walls, the bottom course will be left in situ at this stage.

7.5 Other repair methodologies

Conisbee have set out repair methodologies for the Power Hall walls, cornice and copings, and the Gantry. These methodologies have been submitted as part of this application however the full details of these repair works can be agreed via conditions should consent be granted for this application.

8 Impact on the Listed Building

The accompanying Heritage Impact Assessment prepared by Donald Insall assesses the works in terms of impact on the listed building and concludes that although some harm has been identified within the proposals, this harm is considered to be 'less than substantial' and is significantly outweighed by the public benefits arising from the works which are detailed in the following section of this cover letter.

Further to this, the methodologies prepared by H.H. Smith set out the sequential process of recording, protection of historic fabric and monitoring works which would ensure the significant elements of the listed building – indirectly affected by the proposals – are preserved.

9 Accordance with Planning Policy

Heritage and Conservation

The key material planning consideration for this application is the impact on the designated heritage asset, the Power Hall, and therefore adherence to planning policy regarding the historic environment.

Paragraph 190 of the NPPF (2021) states that *"in determining applications, local planning authorities should take account of:*

- *the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;*

- *the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and*

- *the desirability of new development making a positive contribution to local character and distinctiveness."*

Paragraphs 201-203 place great weight on the conservation of designated heritage assets, emphasising the need to avoid "substantial harm" in terms of demolition, significant alteration, or compromise the setting unless that harm is clearly justified (via four specific tests) or there are substantial public benefits that outweigh that harm. Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits.

The accompanying Heritage Impact Assessment notes that the proposed works focus on key improvements to the building's envelope to ensure its internal fabric and structure are protected and preserved, whilst significantly improving its environmental performance and subtly upgrading services and the maintenance strategy. The works also include a series of sensitive repairs which, together with the series of carefully developed alterations, will improve its condition and appearance.

Overall, the building would be conserved in a manner that is appropriate to its significance. However, the proposals would involve some elements of 'less than substantial' harm, specifically the installation of the lightening protection and the reduction of rooflights. The full assessment of harm is set out in the accompanying Heritage Impact Assessment prepared by Donald Insall Associates.

Any perceived less than substantial harm to the building is considerably outweighed by the public benefits which ensure the beneficial long-term and optimum viable use of the listed building.

A 'Lighting Protection Strategy' document is submitted with the application which sets out the need for the protection and options explored to minimise the impact on the external façade of the building. Ultimately the protection afforded by the lightening system to the fabric of the building and ultimately therefore the long-term conservation and appreciation of the building outweighs the minor harm caused by its installation.

The reduction in the number of rooflights is not only driven by the technical benefits most notably to the Museum collection and visitor experience, as set out earlier in this letter, but also it is the most viable and feasible proposal. The reduction in rooflights ensures that there is enough budget remaining to complete the Gallery refurbishment and deliver the ultimate public benefit of opening the Gallery again and allowing full appreciation of the asset.

The estimated total cost impact to reinstall all of the rooflights is £390,000 including additional ventilation costs to mitigate overheating. As the budget for this workstream is already challenging, this would impact the financial viability of the whole project.

While the team has been committed to finding a solution which minimises harm whilst delivering this complex and finely balanced project, any overspend on the rooflights would reduce the already challenging Package 4 budget, which includes the interpretation and visitor experience budget. Limited investment in visitor improvements would cause risk to the building's conservation in the long term. Without a renewed visitor experience, the building will remain underused. There would be a significant loss of public benefit if this were to happen.

Taking this into account, the proposals are in accordance with Paragraph 202 of the NPPF in that the public benefits outweigh the 'less than substantial harm' caused by the proposals.

This approach is in line with Policy CC9 Design and Heritage within the adopted Manchester Core Strategy (2012). This policy sets out that development in Manchester City Centre should protect or enhance the heritage assets that have been identified, including listed buildings, conservation areas and scheduled ancient monuments. The policy also supports the need to ensure buildings are of the highest standard in terms of appearance and function, and all reinstatement works will repair the listed fabric to match the original like-for-like.

Saved UDP Policy DC18.1 states that the Council give particularly careful consideration to development within Conservation Areas and will seek to preserve and enhance the character of these designated areas, while saved UDP Policy DC19.1 states that applications for listed building consent involving or having an impact on buildings of Special Architectural or Historic Interest will have regard to securing the retention, restoration, maintenance and continued use of such buildings and to protecting their general setting.

A series of detracting elements will be removed as part of the works including the external cat-ladder, internal and external ductwork, 1980s windows and 1979 rooflight fabric. Furthermore, plasterboard sarking will be removed which is highly visible and detracts from the roof structure, as well as the 1980s platform which obscures the legibility of the space. Furthermore, the replacement of the 1980s plasterboard would result in a modest benefit while there will also be reinstatement of the original glazing bar pattern to the retained rooflights.

The works proposed to facilitate the future reuse and conservation of the building will overall result in the significance of the building preserved and its contribution to the character and appearance of the conservation area being enhanced.

The proposals can therefore be considered to be in accordance with Policy CC9 Design and Heritage of the Manchester Core Strategy (2012) as well saved UDP Policies DC18.1 and DC19.1.

To conclude, the proposals form a key phase in the decarbonisation, improved environmental performance and repair of this listed building. They will ensure the building's external envelope is improved visually and functionally while placing the building at the heart of the Museum's complex and enabling it to be used by the next generation of visitors who will be able to see historic working machines alongside decarbonisation in action, resulting in a considerable public benefit. The compelling benefits offered by the scheme outweigh the 'less than substantial harm' associated with the works overall they preserve the special interest of the listed building and character of the conservation area. On this basis there is not material reason the applications should not be approved.

10 Application Documents

The following information is provided in support of this application:

- Covering Letter, prepared by Deloitte;
- Design and Access Statement (including Schedule of Works and Structural Statement), prepared by Carmody Groarke;
- Architectural Drawings (see Appendix A), prepared by Carmody Groarke;

- Scaffolding Drawings (see Appendix B), prepared by Scaffold Design Ltd;
- Condition Surveys, prepared by Conisbee;
- Construction Environmental Management Plan, prepared by H.H Smith;
- Heritage Impact Assessment, prepared by Donald Insall Associates;
- Lighting Protection Strategy, prepared by Carmody Groarke;
- Method Statements, prepared by H.H Smith;
    - 3b i - Installing new windows and doors
    - 3b ii - Roof installation
    - 3b iii - High level services removal (Non-historic fabric)
    - 3b vi - Removal of non-historic fabric
- Repair Methodologies, prepared by Conisbee for:
    - Power Hall: Walls
    - Power Hall: Cornice and Copings
    - Power Hall: The Gantry
- M&E Strategy, prepared by Max Fordham

The Planning Portal Reference is: PP-10139915 and the required planning application fee has been paid online.

We look forward to receiving your confirmation that the application has been formally registered. In the meantime, if you have any queries or require any further information, please do not hesitate to contact me or my colleague, Katie Wray (0161 455 6350 / kawray@deloitte.co.uk).

Yours sincerely



John Cooper
Deloitte LLP

Deloitte.

Appendix A – Drawings List

Description	Drawing Reference
Site Location Plan	PHL-CGA-00-00-DR-A-01100_PL1
Site Plan	PHL-CGA-00-00-DR-A-01101_PL1
Existing	
Existing Ground Floor Plan	PHL-CGA-00-00-DR-A-06100_PL1
Existing Roof Plan	PHL-CGA-00-RF-DR-A-06101_PL1
Existing Reflected Ceiling Plan	PHL-CGA-00-RF-DR-A-06120_PL1
Existing Sections 01 - 03	PHL-CGA-00-XX-DR-A-06200_PL1
Existing Sections 04 - 05	PHL-CGA-00-XX-DR-A-06201_PL1
Existing Elevations 01 - 02	PHL-CGA-00-XX-DR-A-06300_PL1
Existing Elevations 03 - 04	PHL-CGA-00-XX-DR-A-06301_PL1
Existing Section 03	PHL-CGA-00-XX-DR-A-06500_PL1
Existing Parapet and Valley Gutter Detail	PHL-CGA-00-XX-DR-A-06501_PL1
Proposed	
Proposed Ground Floor Plan	PHL-CGA-00-00-DR-A-06110_PL1
Proposed Roof Plan	PHL-CGA-00-RF-DR-A-06111_PL1
Proposed Reflected Ceiling Plan	PHL-CGA-00-RC-DR-A-06121_PL1
Proposed Section 01 - 03	PHL-CGA-00-XX-DR-A-06210_PL1
Proposed Section 04 - 05	PHL-CGA-00-XX-DR-A-06211_PL1
Proposed Elevation 01 -02	PHL-CGA-00-XX-DR-A-06310_PL1
Proposed Elevation 03 -04	PHL-CGA-00-XX-DR-A-06311_PL1
Proposed Section 03	PHL-CGA-00-XX-DR-A-06510_PL1
Proposed Parapet and Valley Gutter Detail	PHL-CGA-00-XX-DR-A-06511_PL1
Proposed Roof Detail	PHL-CGA-00-RF-DR-A-47111_PL1
Windows and Doors	
Liverpool Road Window W.05	PH-CGA-00-XX-DR-A-31510_PL1
Liverpool Road Window Details	PH-CGA-00-XX-DR-A-31511_PL1
Liverpool Road Window W.06	PH-CGA-00-XX-DR-A-31512_PL1
Typical North Yard Window	PH-CGA-00-XX-DR-A-31513_PL1
North Yard Window Details	PH-CGA-00-XX-DR-A-31514_PL1
Lower Byrom Street Window W.04	PH-CGA-00-XX-DR-A-31515_PL1
North Yard Main Entrance W.01/D.01	PH-CGA-00-XX-DR-A-31516_PL1
Demolition	
Demolition Ground Floor Plan	PHL-CGA-00-00-DR-A-00100_PL1
Demolition Reflected Ceiling Plan	PHL-CGA-00-RF-DR-A-00120_PL1
Demolition Sections 01 - 03	PHL-CGA-00-XX-DR-A-00200_PL1
Demolition Sections 04 - 05	PHL-CGA-00-XX-DR-A-00201_PL1
Demolition Elevations 01 - 02	PHL-CGA-00-XX-DR-A-00300_PL1
Demolition Elevations 03 - 04	PHL-CGA-00-XX-DR-A-00301_PL1
Demolition Section 03	PHL-CGA-00-XX-DR-A-00500_PL1

Appendix B – Scaffolding Drawings List

Description	Drawing Reference
Section Detail and Notes	19-BSD-337-01 Revision B-01 Rev B
Plan Only Liverpool Road	19-BSD-337-01 Revision B-02 Rev B
Plan Only Courtyard	19-BSD-337-01 Revision B-03 Rev B
Plan Only Gable Elevations	19-BSD-337-01 Revision B-04 Rev B
Elevation Liverpool Road	19-BSD-337-01 Revision B-05 Rev B
Elevation in Courtyard	19-BSD-337-01 Revision B-06 Rev B
Elevations Gable(s)	19-BSD-337-01 Revision B-07 Rev B
01 - Section Views	19-BSD-337-02 Revision B
02 Plan Views	19-BSD-337-02 Revision B
01 Plan Views	19-BSD-337-03 Revision C
02 - Elevation & Section Views	19-BSD-337-03 Revision C
A2 Portrait	19-BSD-337-04 Revision A
A2 Landscape	19-BSD-337-05 Revision A
A1 Portrait	19-BSD-337-06A